

RECEIVED

OCT 10 2002

TECH CENTER 1600/2900

- 45 -

SEQUENCE LISTING

<110> BRAUN, Curtis
PURAC, Admir
BORGFORD, Thor

<120> Improved Ricin-Like Toxins for Treatment of Cancer

<130> 10447-22

<140> US 10/089,058

<141> 2000-10-04

<150> US 60/197,409

<151> 2000-04-14

<150> US 60/157,807

<151> 1999-10-04

<160> 130

<170> PatentIn version 3.1

<210> 1

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 301-3'

<400> 1
atgtggggac aacgaaattt taatgctgat

<210> 2

<211> 105

RECEIVED
TECH CENTER 1600/2900
02 OCT -4 PM 12: 27

RECEIVED
OCT 08 2002
TECH CENTER 1600/2900

<212> DNA

<213> Ricinus communis

<400> 2

ctcatggtgt atagatgcg acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 3

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 301-5'

<400> 3

gccaaagagga ccaaactgtg acgatggtgg 30

<210> 4

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP301 (MMP-9) linker

<400> 4

gcacctcac catcgtcaca gtttggtcct cttggcatgt ggggacaacg aaattttaat 60

gctgatggtt 69

<210> 5

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP301

<400> 5

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg	60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc	120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac	180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca	240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca	420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat	660
attgaggagg aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa	780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgc acctccacca	900
tcgtcacagt ttggctctct tggcatgtgg ggacaacgaa attttaatgc tgatgtttgt	960
atggatcctg agcccatagt gcgtatcgta ggtcgaaatg gtctatgtgt tgatgttagg	1020
gatggaagat tccacaacgg aaacgcaata cagttgtggc catgcaagtc taatacagat	1080
gcaaatacgc tctggacttt gaaaagagac aatactattc gatctaattg aaagtgttta	1140
actacttacg ggtacagtcc gggagtctat gtgatgatct atgattgcaa tactgctgca	1200
actgatgcca cccgctggca aatatgggat aatggaacca tcataaatcc cagatctagt	1260
ctagttttag cagcgacatc agggacacgt ggtaccacac ttacagtgca aaccaacatt	1320
tatgccgtta gtcaagggtg gcttcctact aataatacac aaccttttgt tacaaccatt	1380
gttgggctat atgggtctgt cttgcaagca aatagtggac aagtatggat agaggactgt	1440
agcagtgaaa aggctgaaca acagtgggct ctttatgcag atggttcaat acgtcctcag	1500
caaaaccgag ataattgcct tacaagtgat tctaataac gggaaacagt tgttaagatc	1560
ctctcttggt gccctgcac ctctggccaa cgatggatgt tcaagaatga tggaaccatt	1620
ttaaatttgt atagtgggtt ggtgttagat gtgaggcgat cggatccgag ccttaaacaa	1680

atcattcttt accctctcca tggtagacca aaccaaatat gggtaccatt attttgatag 1740
acagattact ctcttgacgt gtgtgtgtcc tgccatgaaa atagatggct taaataaaaa 1800
ggacattgta aattttgtaa ctgaaaggac agcaagttat atcgaattcc tgcag 1855

<210> 6

<211> 29

<212> PRT

<213> Ricinus communis

<400> 6

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 7

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP301(MMP-9) linker

<400> 7

Cys Ala Pro Pro Pro Ser Ser Gln Phe Gly Pro Leu Gly Met Trp Gly
1 5 10 15

Gln Arg Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 8

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 302-3'

<400> 8

gggcagtgta tggatcctga gccc

24

<210> 9

<211> 105

<212> DNA

<213> Ricinus communis

<400> 9

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca

60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc

105

<210> 10

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 302-5'

<400> 10

tgcaattcct tgcggagaaa actgtgacga

30

<210> 11

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP302(MMP-9) linker

<400> 11

gcacctccac catcgtcaca gttttctccg caaggaattg cagggcag

48

<210> 12

<211> 1834

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP302

<400> 12

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg	60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc	120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac	180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca	240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca	420
atcactcadc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggttaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gtttccaact	600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa	780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgc acctccacca	900
tcgtcacagt tttctccgca aggaattgca gggcagtgtg tggatcctga gcccatagtg	960
cgtatcgtag gtcgaaatgg tctatgtgtt gatgttaggg atggaagatt ccacaacgga	1020
aacgcaatac agttgtggcc atgcaagtct aatacagatg caaatcagct ctggactttg	1080
aaaagagaca atactattcg atctaattgga aagtgtttaa ctacttacgg gtacagtccg	1140
ggagtctatg tgatgatcta tgattgcaat actgctgcaa ctgatgccac ccgctggcaa	1200
atatgggata atggaaccat cataaatccc agatctagtc tagtttttagc agcgacatca	1260
gggaacagtg gtaccacact tacagtgcaa accaacattt atgccgttag tcaaggttgg	1320
cttctacta ataatacaca accttttggt acaaccattg ttgggctata tggctctgtgc	1380
ttgcaagcaa atagtggaca agtatggata gaggactgta gcagtgaaaa ggctgaacaa	1440

```

cagtgggctc tttatgcaga tggttcaata cgtcctcagc aaaaccgaga taattgcctt 1500
acaagtgatt ctaatatacg ggaaacagtt gttaagatcc tctcttgtgg ccctgcatcc 1560
tctggccaac gatggatggt caagaatgat ggaaccattt taaatttgta tagtggggtg 1620
gtgttagatg tgaggcgatc ggatccgagc cttaaacaaa tcattcttta ccctctccat 1680
ggtgacccaa accaaatatg gttaccatta ttttgataga cagattactc tcttgcatg 1740
tgtgtgtcct gccatgaaaa tagatggcctt aaataaaaag gacattgtaa attttgtaac 1800
tgaaaggaca gcaagttata tcgaattcct gcag 1834

```

<210> 13

<211> 29

<212> PRT

<213> Ricinus communis

<400> 13

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1          5          10          15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20          25

```

<210> 14

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP302(MMP-9) linker

<400> 14

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Pro Gln Gly Ile Ala Gly
1          5          10          15

```

```

Gln Cys Met Asp Pro Glu
          20

```

<210> 15

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 303-3'

<400> 15

gggcagcgaa attttaatgc tgat

24

<210> 16

<211> 105

<212> DNA

<213> Ricinus communis

<400> 16

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca

60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc

105

<210> 17

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 303-5'

<400> 17

tgcaattcct tgcggagagc atctatacac catgag

36

<210> 18

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP303 (MMP-1) linker

<400> 18

tctccgcaag gaattgcagg gcagcgaaat tttaatgctg atgtt 45

<210> 19

<211> 1831

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP303

<400> 19

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc aggggtgtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaataacca 240

gtgttgccaa acagagttgg ttgacctata aaccaacggg ttattttagt tgaactctca 300

aatcatgcag agcttttctgt tacattagcg ctggatgtca ccaatgcata tgtgggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttactga tgttcaaaat cgatatacat tcgccttttg tggttaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccac 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgctc tccgcaagga 900

attgcagggc agcgaaattt taatgctgat gtttgtatgg atcctgagcc catagtgcgt 960

atcgtaggtc gaaatggtct atgtgttgat gttagggatg gaagattcca caacggaaac 1020

gcaatacagt tgtggccatg caagtctaata acagatgcaa atcagctctg gactttgaaa 1080

agagacaata ctattcgatc taatggaaag tgtttaacta cttacgggta cagtccggga 1140

```

gtctatgtga tgatctatga ttgcaatact gctgcaactg atgccacccg ctggcaaata 1200
tgggataatg gaaccatcat aaatcccaga tctagtctag ttttagcagc gacatcaggg 1260
aacagtggta ccacacttac agtgcaaacc aacatttatg ccgttagtca aggttggctt 1320
cctactaata atacacaacc ttttgttaca accattgttg ggctatatgg tctgtgcttg 1380
caagcaaata gtggacaagt atggatagag gactgtagca gtgaaaaggc tgaacaacag 1440
tgggctcttt atgcagatgg ttcaatacgt cctcagcaaa accgagataa ttgccttaca 1500
agtgattcta atatacggga aacagtgtgt aagatcctct cttgtggccc tgcacacct 1560
ggccaacgat ggatgttcaa gaatgatgga accattttta atttgtatag tgggttggtg 1620
ttagatgtga ggcgatcgga tccgagcctt aaacaaatca ttctttaccc tctccatggt 1680
gacccaaacc aaatatggtt accattattt tgatagacag attactctct tgcagtgtgt 1740
gtgtcctgcc atgaaaatag atggcttaaa taaaaggac attgtaaatt ttgtaactga 1800
aaggacagca agttatatcg aattcctgca g 1831

```

<210> 20

<211> 29

<212> PRT

<213> Ricinus communis

<400> 20

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1          5          10          15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20          25

```

<210> 21

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP303 (MMP-9) linker

<400> 21

Cys	Ser	Pro	Gln	Gly	Ile	Ala	Gly	Gln	Arg	Asn	Phe	Asn	Ala	Asp	Val
1				5					10					15	

Cys	Met	Asp	Pro	Glu
			20	

<210> 22

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 304-3'

<400> 22	
gggcagtgtgta tggatcctga gccc	24

<210> 23

<211> 105

<212> DNA

<213> Ricinus communis

<400> 23	
ctcatgggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca	60
gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc	105

<210> 24

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 304-5'

<400> 24	
tgcaattcct tgcggagagc atctatacac catgag	36

<210> 25

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP304(MMP-9) linker

<400> 25

tctccgcaag gaattgcagg gcag

24

<210> 26

<211> 1810

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP304

<400> 26

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc aggggtgtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcc a ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacgg tttatcttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggctcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcggt cctttataat ttgcatcaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgctc tccgcaagga 900

```

attgcagggc agtgtatgga tcctgagccc atagtgcgta tcgtaggtcg aaatgggtcta    960
tgtgttgatg ttagggatgg aagattccac aacggaaacg caatacagtt gtggccatgc    1020
aagtctaata cagatgcaaa tcagctctgg actttgaaaa gagacaatac tattcgatct    1080
aatggaaagt gtttaactac ttacgggtac agtccgggag tctatgtgat gatctatgat    1140
tgcaatactg ctgcaactga tgccaccgcg tggcaaatat gggataatgg aaccatcata    1200
aatcccagat ctagtctagt tttagcagcg acatcagggg acagtgggtac cacacttaca    1260
gtgcaaacca acatttatgc cgttagtcaa gggtggcttc ctactaataa tacacaacct    1320
tttgttacaa ccattgttgg gctatatggt ctgtgcttgc aagcaaatag tggacaagta    1380
tggatagagg actgtagcag tgaaaaggct gaacaacagt gggctcttta tgcagatggg    1440
tcaatacgtc ctcagcaaaa ccgagataat tgccttacia gtgattctaa tatacgggaa    1500
acagttgtta agatcctctc ttgtggccct gcatcctctg gccaacgatg gatgttcaag    1560
aatgatggaa ccattttaaa tttgtatagt gggttggtgt tagatgtgag gcgatcggat    1620
ccgagcctta aacaaatcat tctttaccct ctccatggtg acccaaacca aatatgggta    1680
ccattatatt gatagacaga ttactctctt gcagtgtgtg tgtcctgcca tgaaaataga    1740
tggcttaaata aaaaaggaca ttgtaaattt tgtaactgaa aggacagcaa gttatatcga    1800
attcctgcag                                     1810

```

<210> 27

<211> 29

<212> PRT

<213> Ricinus communis

<400> 27

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1           5           10           15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20           25

```

<210> 28

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP304(MMP-9) linker

<400> 28

Cys Ser Pro Gln Gly Ile Ala Gly Gln Cys Met Asp Pro Glu
1 5 10

<210> 29

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 305-3'

<400> 29

gggcagtgtgta tggatcctga gccc

24

<210> 30

<211> 105

<212> DNA

<213> Ricinus communis

<400> 30

ctcatgggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca

60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc

105

<210> 31

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 305-5'

<400> 31
tgcaattcct tgcggagatg gtggaggtgc gcatct 36

<210> 32

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP305 (MMP-9) linker

<400> 32
gcacctccac catctccgca aggaattgca gggcag 36

<210> 33

<211> 1822

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP305

<400> 33
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc 120
aaacaatacc caattataaa ctttaccaca gcggttgcca ctgtgcaaag ctacacaaac 180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttatttttagt tgaactctca 300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360
taccgtgctg gaaatagcgc atattttctt catcctgaca atcaggaaga tgcagaagca 420
atcactcadc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggttaattat 480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

```

gtaattacac ttgagaatag ttggggggaga ctttccactg caattcaaga gtctaaccaa 780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840
gatgtgagta tattaatccc tatcatagct ctcatgggtg atagatgcgc acctccacca 900
tctccgcaag gaattgcagg gcagtgtatg gatcctgagc ccatagtgcg tatcgtaggt 960
cgaaatggtc tatgtgttga tgttagggat ggaagattcc acaacggaaa cgcaatacag 1020
ttgtggccat gcaagtctaa tacagatgca aatcagctct ggactttgaa aagagacaat 1080
actattcgat ctaatggaaa gtgtttaact acttacgggt acagtccggg agtctatgtg 1140
atgatctatg attgcaatac tgctgcaact gatgccaccc gctggcaaat atgggataat 1200
ggaaccatca taaatcccag atctagtcta gtttttagcag cgacatcagg gaacagtggg 1260
accacactta cagtgcaaac caacatttat gccgttagtc aagggtgggt tcctactaat 1320
aatacacaac cttttgttac aaccattgtt gggctatatg gtctgtgctt gcaagcaaat 1380
agtggacaag tatggataga ggactgtagc agtgaaaagg ctgaacaaca gtgggctctt 1440
tatgcagatg gttcaatacg tcctcagcaa aaccgagata attgccttac aagtgattct 1500
aatatacggg aaacagttgt taagatcctc tcttgtggcc ctgcatcctc tggccaacga 1560
tggatgttca agaatgatgg aaccatttta aatttgtata gtgggttggt gttagatgtg 1620
aggcgatcgg atccgagcct taaacaaatc attctttacc ctctccatgg tgacccaaac 1680
caaatatggg taccattatt ttgatagaca gattactctc ttgcagtgtg tgtgtcctgc 1740
catgaaaata gatggcttaa ataaaaagga cattgtaaat tttgtaactg aaaggacagc 1800
aagttatatc gaattcctgc ag 1822

```

<210> 34

<211> 29

<212> PRT

<213> Ricinus communis

<400> 34

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1          5          10          15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20          25

```

<210> 35

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP305 (MMP-9) linker

<400> 35

Cys	Ala	Pro	Pro	Pro	Ser	Pro	Gln	Gly	Ile	Ala	Gly	Gln	Cys	Met	Asp
1				5					10				15		

Pro Glu

<210> 36

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 308-3'

<400> 36

atgtggggac aatgtggtgg cggagggccc atagtgcgta tcgta 45

<210> 37

<211> 120

<212> DNA

<213> Ricinus communis

<400> 37

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agcccatagt gcgtatcgta 120

<210> 38

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 308-5'

<400> 38
gccaaagagga cctgggtggag gtgcgcatct 30

<210> 39

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP308 (MMP-9) linker

<400> 39
gcacctccac caggctcctct tggcatgtgg ggacaa 36

<210> 40

<211> 1822

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP308

<400> 40
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc 120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaaac 180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttatttttagt tgaactctca 300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg ttgtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgc acctccacca 900
ggtcctcttg gcatgtgggg acaatgtggt ggcggagggc ccatagtgcg tatcgtaggt 960
cgaaatggtc tatgtgttga tgtagggat ggaagattcc acaacggaaa cgcaatacag 1020
ttgtggccat gcaagtctaa tacagatgca aatcagctct ggactttgaa aagagacaat 1080
actattcgat ctaatggaaa gtgtttaact acttacgggt acagtccggg agtctatgtg 1140
atgatctatg attgcaatac tgctgcaact gatgccaccc gctggcaaat atgggataat 1200
ggaaccatca taaatcccag atctagtcta gttttagcag cgacatcagg gaacagtgggt 1260
accacactta cagtgcaaac caacatttat gccgttagtc aaggttggct tcctactaat 1320
aatacacaac cttttgttac aaccattgtt gggctatatg gtctgtgctt gcaagcaaatt 1380
agtggacaag tatggataga ggactgtagc agtgaaaagg ctgaacaaca gtgggctctt 1440
tatgcagatg gttcaatacg tcctcagcaa aaccgagata attgccttac aagtgattct 1500
aatatacggg aaacagttgt taagatcctc tcttgtggcc ctgcatcctc tggccaacga 1560
tggatgttca agaatgatgg aaccatttta aatttgtata gtgggttgggt gttagatgtg 1620
aggcgatcgg atccgagcct taaacaaatc attctttacc ctctccatgg tgacccaaac 1680
caaatatgggt taccattatt ttgatagaca gattactctc ttgcagtgtg tgtgtcctgc 1740
catgaaaata gatggcttaa ataaaaagga cattgtaaat tttgtaactg aaaggacagc 1800
aagttatata gaattcctgc ag 1822

<210> 41

<211> 29

<212> PRT

<213> Ricinus communis

<400> 41

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val

1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 42

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP308 (MMP-9) linker

<400> 42

Cys Ala Pro Pro Pro Gly Pro Leu Gly Met Trp Gly Gln Cys Gly Gly
1 5 10 15

Gly Gly

<210> 43

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 309-3'

<400> 43

tttaatgctg atgtttgtgg tggcggaggg cccatagtgc gtatcgta

48

<210> 44

<211> 120

<212> DNA

<213> Ricinus communis

<400> 44

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttcttttgc tataaggcca

60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agcccatagt gcgtatcgta 120

<210> 45

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 309-5'

<400> 45

atttcgttgc ccccatatgc caagaggacc aaactgtgac gatggtgg 48

<210> 46

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP309 (MMP-9) linker

<400> 46

gcacctccac catcgtcaca gtttggtcct cttggcatgt ggggacaacg aaattttaat 60

gctgatgtt 69

<210> 47

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP309

<400> 47

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt cctttataat ttgcatcaa atgatttcag aagcagcaag attccaatat 660
attgaggagg aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgc acctccacca 900
tcgtcacagt ttggctcctc tggcatgtgg ggacaacgaa attttaatgc tgatgtttgt 960
ggtggcggag ggcccatagt gcgtatcgta ggtcgaaatg gtctatgtgt tgatgttagg 1020
gatggaagat tccacaacgg aaacgcaata cagttgtggc catgcaagtc taatacagat 1080
gcaaactcagc tctggacttt gaaaagagac aatactattc gatctaattg aaagtgttta 1140
actacttacg ggtacagtcc gggagtctat gtgatgatct atgattgcaa tactgctgca 1200
actgatgcca cccgctggca aatatgggat aatggaacca tcataaatcc cagatctagt 1260
ctagttttag cagcgacatc agggaaacagt ggtaccacac ttacagtgca aaccaacatt 1320
tatgccgtta gtcaaggttg gcttcctact aataatacac aaccttttgt tacaaccatt 1380
gttgggctat atggtctgtg cttgcaagca aatagtggac aagtatggat agaggactgt 1440
agcagtgaaa aggctgaaca acagtgggct ctttatgcag atggttcaat acgtcctcag 1500
caaaaccgag ataattgcct tacaagtgat tctaatacac gggaaacagt tgттаagatc 1560
ctctcttggt gccctgcac ctctggccaa cgatggatgt tcaagaatga tggaaccatt 1620
ttaaatttgt atagtgggtt ggtgtttagat gtgaggcgat cggatccgag ccttaaacia 1680
atcattcttt accctctcca tggtgacca aaccaaatat gggtaccatt attttgatag 1740
acagattact ctcttgcaat gtgtgtgtcc tgccatgaaa atagatggct taaataaaaa 1800
ggacattgta aattttgtaa ctgaaaggac agcaagttat atcgaattcc tgcag 1855

<211> 29

<212> PRT

<213> Ricinus communis

<400> 48

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 49

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP309 (MMP-9) linker

<400> 49

Cys Ala Pro Pro Pro Ser Ser Gln Phe Gly Pro Leu Gly Met Trp Gly
1 5 10 15

Gln Arg Asn Phe Asn Ala Asp Val Cys Gly Gly Gly Gly
20 25

<210> 50

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 313-3'

<400> 50
gtagtcggcg ggtgtatgga tcctgag

<210> 51

<211> 105

<212> DNA

<213> Ricinus communis

<400> 51

ctcatggtgt atagatgcg acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 52

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 313-5'

<400> 52

tcgtcctggg catctataca ccat 24

<210> 53

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP313 (UPA) linker

<400> 53

ccaggacgag tagtcggcgg g 21

<210> 54

<211> 1807

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP 313

<400> 54

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg	60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc	120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac	180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca	240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttatttttagt tgaactctca	300
aatcatgcag agctttctgt tacatttagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atattttcttt catcctgaca atcaggaaga tgcagaagca	420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggttaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcatcaa atgatttcag aagcagcaag attccaatat	660
attgaggagg aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaacca	780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcc aggacgagta	900
gtcggcgggt gtatggatcc tgagcccata gtgcgtatcg taggtcgaaa tggctctatgt	960
gttgatgtta gggatggaag attccacaac ggaaacgcaa tacagttgtg gccatgcaag	1020
tctaatacag atgcaaatca gctctggact ttgaaaagag acaatactat tcgatcta	1080
ggaaagtgtt taactactta cgggtacagt cggggagtct atgtgatgat ctatgattgc	1140
aatactgctg caactgatgc caccgcgtgg caaatatggg ataatggaac catcataaat	1200
cccagatcta gtctagtttt agcagcgaca tcagggaaca gtggtaccac acttacagt	1260
caaaccaaca tttatgccgt tagtcaaggt tggcttccta ctaataatac acaacctttt	1320
gttacaacca ttgttgggct atatggtctg tgcttgcaag caaatagtgg acaagtatgg	1380
atagaggact gtagcagtga aaaggctgaa caacagtggg ctctttatgc agatggttca	1440
atagctctc agcaaaaccg agataattgc cttacaagtg attctaatat acgggaaaca	1500
gttgtaaga tcctctcttg tggccctgca tcctctggcc aacgatggat gttcaagaat	1560
gatggaacca ttttaaattt gtatagtggg ttggtgtag atgtgaggcg atcggatccg	1620
agccttaaac aaatcattct ttaccctctc catggtgacc caaaccaaat atggttacca	1680

ttatatttgat agacagatta ctctcttgca gtgtgtgtgt cctgccatga aaatagatgg 1740
cttaaataaa aaggacattg taaattttgt aactgaaagg acagcaagtt atattgaatt 1800
cctgcag 1807

<210> 55

<211> 29

<212> PRT

<213> Ricinus communis

<400> 55

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 56

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP313 (UPA) linker

<400> 56

Cys Pro Gly Arg Val Val Gly Gly Cys Met Asp Pro Glu
1 5 10

<210> 57

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 314-3'

<400> 57
gtagtcggcg ggggaggcgg gggttgtatg gtcctgag 39

<210> 58

<211> 105

<212> DNA

<213> Ricinus communis

<400> 58
ctcatgggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60
gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 59

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 314-5'

<400> 59
tcgtcctgga cccccgcctc cgcattctata caccat 36

<210> 60

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP314 (UPA) linker

<400> 60
ggaggcgggg gtccaggacg agtagtcggc gggggaggcg ggggt 45

<210> 61

<211> 1831

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP314

<400> 61

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg	60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc	120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac	180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca	240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca	420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggttaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat	660
attgaggggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaacca	780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggggggggt	900
ccaggacgag tagtcggcgg gggaggcggg ggttgtatgg atcctgagcc catagtgcgt	960
atcgtaggtc gaaatgggtct atgtgttgat gttagggatg gaagattcca caacggaaac	1020
gcaatacagt tgtggccatg caagtctaata acagatgcaa atcagctctg gactttgaaa	1080
agagacaata ctattcgatc taatggaaaag tgtttaacta cttacgggta cagtccggga	1140
gtctatgtga tgatctatga ttgcaatact gctgcaactg atgccaccg ctggcaaata	1200
tgggataatg gaaccatcat aaatcccaga tctagtctag ttttagcagc gacatcaggg	1260
aacagtggta ccacacttac agtgcaaacc aacatttatg ccgttagtca aggttggtt	1320
cctactaata atacacaacc ttttgttaca accattgttg ggctatatgg tctgtgcttg	1380
caagcaaata gtggacaagt atggatagag gactgtagca gtgaaaaggc tgaacaacag	1440
tgggctcttt atgcagatgg ttcaatacgt cctcagcaaa accgagataa ttgccttaca	1500
agtgattcta atatacggga aacagttggt aagatcctct cttgtggccc tgcactctct	1560

ggccaacgat ggatgttcaa gaatgatgga accatttttaa atttgtatag tgggttggtg 1620
ttagatgtga ggcgatcgga tccgagcctt aaacaaatca ttctttaccc tctccatggt 1680
gacccaaacc aaatatgggt accattatgt tgatagacag attactctct tgcagtgtgt 1740
gtgtcctgcc atgaaaatag atggcttaaa taaaaaggac attgtaaatt ttgtaactga 1800
aaggacagca agttatatcg aattcctgca g 1831

<210> 62

<211> 28

<212> PRT

<213> Ricinus communis

<400> 62

Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val Val
1 5 10 15

Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 63

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP314 (UPA) linker

<400> 63

Cys Gly Gly Gly Gly Pro Gly Arg Val Val Gly Gly Gly Gly Gly Gly
1 5 10 15

Cys Met Asp Pro Glu
20

<210> 64

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 315-3'

<400> 64
ccaggacgag tagtcggcgg gtgtatggat cctgag 36

<210> 65

<211> 105

<212> DNA

<213> Ricinus communis

<400> 65
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60
gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 66

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 315-5'

<400> 66
cccgccgact actcgtcctg ggcattctata caccat 36

<210> 67

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP315 (UPA) linker

<400> 67
ccaggacgag tagtcggcgg gccaggacga gtagtcggcg gg 42

<210> 68

<211> 1828

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP315

<400> 68
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc 120
aaacaatacc caattataaa ctttaccaca gcgggtgccca ctgtgcaaag ctacacaaac 180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggg ttatttttagt tgaactctca 300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360
taccgtgctg gaaatagcgc atattttcttt catcctgaca atcaggaaga tgcagaagca 420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggttaattat 480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt cctttataat ttgcatccaa atgattttcag aagcagcaag attccaatat 660
attgaggggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720
gtaattacac ttgagaatag ttggggggaga ctttccactg caattcaaga gtctaaccaa 780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgccc aggacgagta 900
gtcggcgggc caggacgagt agtcggcggg tgtatggatc ctgagcccat agtgcgtatc 960
gtaggtcgaa atggtctatg tgttgatgtt agggatggaa gattccacaa cggaaacgca 1020
atacagttgt ggccatgcaa gtctaataca gatgcaaadc agctctggac tttgaaaaga 1080
gacaatacta ttcatctaa tggaaagtgt ttaactactt acgggtacag tccgggagtc 1140
tatgtgatga tctatgattg caatactgct gcaactgatg ccacccgctg gcaaatatgg 1200
gataatggaa ccatcataaa tcccagatct agtctagttt tagcagcgac atcaggggaac 1260

```

agtggtagca cacttacagt gcaaaccaac atttatgccg ttagtcaagg ttggcttcct 1320
actaataata cacaaccttt tgttacaacc attgttgggc tatatgggtct gtgcttgcaa 1380
gcaaataagt gacaagtatg gatagaggac ttagtcagtg aaaaggctga acaacagtgg 1440
gctcttttat cagatgggtc aatacgtcct cagcaaaacc gagataattg ccttacaagt 1500
gattctaata tacgggaaac agttgttaag atcctctctt gtggccctgc atcctctggc 1560
caacgatgga tgttcaagaa tgatggaacc attttaaatt tgtatagtgg gttgggtgta 1620
gatgtgaggc gatcggatcc gagccttaaa caaatcattc tttaccctct ccatggtgac 1680
ccaaaccaa tatggttacc attattttga tagacagatt actctcttgc agtgtgtgtg 1740
tcctgccatg aaaatagatg gcttaaataa aaaggacatt gtaaattttg taactgaaag 1800
gacagcaagt tatatcgaat tcctgcag 1828

```

<210> 69

<211> 29

<212> PRT

<213> Ricinus communis

<400> 69

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1          5          10          15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20          25

```

<210> 70

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP315 (UPA) linker

<400> 70

```

Cys Pro Gly Arg Val Val Gly Gly Pro Gly Arg Val Val Gly Gly Cys
1          5          10          15

```

Met Asp Pro Glu
20

<210> 71

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 316-3'

<400> 71
attgcagggc agggaggggg tagtagcggc gggggatgta tggatcctga g 51

<210> 72

<211> 105

<212> DNA

<213> Ricinus communis

<400> 72
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60
gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 73

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 316-5'

<400> 73
tccttgcgga ccccccgcctg gagtcccgcc tccgcatcta tacaccat 48

<210> 74

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP316 (UPA) linker

<400> 74

ggaggcgggg actccagcgg ggggccgcaa ggaattgcag ggcagggagg gggtagtagc 60

ggcgggggga 69

<210> 75

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP316

<400> 75

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc aggggtgtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcggttgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagtttg tttgcctata aaccaacggg ttatttttagt tgaactetca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggctcggc 360

taccgtgctg gaaatagcgc atattttctt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttactga tgttcaaaat cgatatacat tcgccttttg tggttaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccac 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcattggtg atagatgcgg aggggggggt 900

ggaggcgggg gtccgcaagg aattgcaggg caggggaggg gtagtagcgg cgggggatgt 960

```

atggatcctg agcccatagt gcgatcgtg ggtcgaaatg gtctatgtgt tgatgttagg 1020
gatggaagat tccacaacgg aaacgcaata cagttgtggc catgcaagtc taatacagat 1080
gcaaatacgc tctggacttt gaaaagagac aatactattc gatctaattg aaagtgttta 1140
actacttacg ggtacagtcc gggagtctat gtgatgatct atgattgcaa tactgctgca 1200
actgatgcca cccgctggca aatatgggat aatggaacca tcataaatcc cagatctagt 1260
ctagtttttag cagcgacatc agggaaacagt ggtaccacac ttacagtgca aaccaacatt 1320
tatgccgtta gtcaaggttg gcttcctact aataatacac aaccttttgt tacaaccatt 1380
gttgggctat atgggtctgtg cttgcaagca aatagtggac aagtatggat agaggactgt 1440
agcagtgaaa aggctgaaca acagtgggct ctttatgcag atgggtcaat acgtcctcag 1500
caaaaccgag ataattgcct tacaagtgat tctaatacac gggaaacagt tgttaagatc 1560
ctctcttggt gccctgcac ctctggccaa cgatggatgt tcaagaatga tggaaccatt 1620
ttaaatttgt atagtgggtt ggtgttagat gtgaggcgat cggatccgag ccttaaacia 1680
atcattcttt accctctcca tggtagacca aaccaaatat ggttaccatt attttgatag 1740
acagattact ctcttgcaat gtgtgtgtcc tgccatgaaa atagatggct taaataaaaa 1800
ggacattgta aattttgtaa ctgaaaggac agcaagttat atcgaattcc tgcag 1855

```

<210> 76

<211> 29

<212> PRT

<213> Ricinus communis

<400> 76

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1          5          10          15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20          25

```

<210> 77

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP316 (UPA) linker

<400> 77

Cys Gly Gly Gly Ser Ser Gly Gly Gly Pro Gln Gly Ile Ala Gly Gln
1 5 10 15

Gly Gly Gly Ser Ser Gly Gly Gly Cys Met Asp Pro Glu
20 25

<210> 78

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 318-3'

<400> 78

attgcagggc aggatgaaga ggatgctgat gtttgtatg 39

<210> 79

<211> 105

<212> DNA

<213> Ricinus communis

<400> 79

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 80

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 318-5'

<400> 80

tccttgccgga gaacctcctg acgatggtgg agg

33

<210> 81

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP318 (MMP-9) linker

<400> 81

gcacctccac catcgtcagg aggttctccg caaggaattg cagggcagga tgaagaggat

60

gctgatggt

69

<210> 82

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP318

<400> 82

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg

60

ctttgttttg gatccacctc aggggtgtct ttcacattag aggataacaa catattcccc

120

aaacaataacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac

180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca

240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttatttttagt tgaactctca

300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc

360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca

420

atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggttaattat

480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca

540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact

600

```

ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840
gatgtgagta tattaatccc tatcatagct ctcatgggtg atagatgcgc acctccacca 900
tcgtcggagg ttctccgcaa ggaattgcag ggcaggatga agaggaatgc tgatgtttgt 960
atggatcctg agcccatagt gcgtatcgta ggtcgaaatg gtctatgtgt tgatgttagg 1020
gatggaagat tccacaacgg aaacgcaata cagttgtggc catgcaagtc taatacagat 1080
gcaaatacgc tctggacttt gaaaagagac aatactattc gatctaattg aaagtgttta 1140
actacttacg ggtacagtcc gggagtctat gtgatgatct atgattgcaa tactgctgca 1200
actgatgcca cccgctggca aatatgggat aatggaacca tcataaatcc cagatctagt 1260
ctagttttag cagcgacatc agggaaacagt ggtaccacac ttacagtgca aaccaacatt 1320
tatgccgtta gtcaaggttg gcttcctact aataatacac aaccttttgt tacaaccatt 1380
gttgggctat atggctctgtg cttgcaagca aatagtggac aagtatggat agaggactgt 1440
agcagtgaaa aggctgaaca acagtgggct ctttatgcag atggttcaat acgtcctcag 1500
caaaaccgag ataattgcct tacaagtgat tctaataatac gggaaacagt tgttaagatc 1560
ctctcttggt gccctgcac ctctggccaa cgatggatgt tcaagaatga tggaaccatt 1620
ttaaatttgt atagtgggtt ggtgttagat gtgaggcgat cggatccgag ccttaaacia 1680
atcattcttt accctctcca tggtgacca aaccaaata ggttaccatt attttgatag 1740
acagattact ctcttgcatg gtgtgtgtcc tgccatgaaa atagatggct taaataaaaa 1800
ggacattgta aattttgtaa ctgaaaggac agcaagttat atcgaattcc tgcag 1855

```

<210> 83

<211> 29

<212> PRT

<213> Ricinus communis

<400> 83

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1           5           10           15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20           25

```

<210> 84

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP318 (MMP-9) linker

<400> 84

Cys Ala Pro Pro Pro Ser Ser Gly Gly Ser Pro Gln Gly Ile Ala Gly
1 5 10 15

Gln Asp Glu Glu Asp Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 85

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 320-3'

<400> 85

gtagtcggcg gggggggagg ctgtatggat cctgag

36

<210> 86

<211> 105

<212> DNA

<213> Ricinus communis

<400> 86

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca

60

gtgggtaccaa attttaatgc tgatgtttgt atggatcctg agccc

105

<210> 87

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 320-5'

<400> 87

tcgtcctcgtt ccgcctccgc atctatacac cat 33

<210> 88

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP320 (UPA) linker

<400> 88

ggaggcggac caggacgagt agtcggcggg gggggaggc 39

<210> 89

<211> 1825

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP320

<400> 89

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc aggggtggtct ttcacattag aggataaaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcggttgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg ttgcctata aaccaacggt ttatttttagt tgaactctca 300

aatcatgcag agcttttctgt tacattagcg ctggatgtca ccaatgcata tgtgggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca	420
atcactcatc ttttctactga tgttcaaaat cgatatacat tcgccttttg tggttaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaacca	780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatgggtg atagatgcgg aggcggacca	900
ggacgagtag tcggcggggg gggaggctgt atggatcctg agcccatagt gcgtatcgta	960
ggtcgaaatg gtctatgtgt tgatgttagg gatggaagat tccacaacgg aaacgcaata	1020
cagttgtggc catgcaagtc taatacagat gcaaactcagc tctggacttt gaaaagagac	1080
aatactattc gatctaattg aaagtgttta actacttacg ggtacagtcc gggagtctat	1140
gtgatgatct atgattgcaa tactgctgca actgatgcca cccgctggca aatatgggat	1200
aatggaacca tcataaatcc cagatctagt ctagttttag cagcgacatc agggaacagt	1260
ggtaccacac ttacagtgca aaccaacatt tatgccgtta gtcaagggtg gcttctact	1320
aataatacac aaccttttgt tacaaccatt gttgggctat atgggtctgtg cttgcaagca	1380
aatagtggac aagtatggat agaggactgt agcagtgaag aggctgaaca acagtgggct	1440
ctttatgcag atgggttcaat acgtcctcag caaaaccgag ataattgcct tacaagtgat	1500
tctaataatac gggaaacagt tgtaagatc ctctcttgtg gccctgcac ctctggccaa	1560
cgatggatgt tcaagaatga tggaaccatt ttaaatttgt atagtgggtt ggtgttagat	1620
gtgagggcat cggatccgag ccttaaacia atcattcttt accctctcca tggtgacca	1680
aaccaaatat gggtaccatt attttgatag acagattact ctcttgcatg gtgtgtgtcc	1740
tgccatgaaa atagatggct taaataaaaa ggacattgta aattttgtaa ctgaaaggac	1800
agcaagttat atcgaattcc tgcag	1825

<210> 90

<211> 29

<212> PRT

<213> Ricinus communis

<400> 90

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 91

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP320 (UPA) linker

<400> 91

Cys Gly Gly Gly Pro Gly Arg Val Val Gly Gly Gly Gly Gly Cys Met
1 5 10 15

Asp Pro Glu

<210> 92

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 321-3'

<400> 92

gtagtcggcg ggggaggctg tatggatcct gag

33

<210> 93

<211> 105

<212> DNA

<213> Ricinus communis

<400> 93
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60
gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 94

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 321-5'

<400> 94
tcgtcctggg cctccgcac tatacaccat 30

<210> 95

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP321 (UPA) linker

<400> 95
ggaggcccag gacgagtagt cggcggggga ggc 33

<210> 96

<211> 1819

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP321

<400> 96
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc	120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac	180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca	240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca	420
atcactcacc ttttactga tgttcaaaat cgatatacat tcgccttttg tggttaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa	780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg agggccagga	900
cgagtagtcg gcgggggagg ctgtatggat cctgagccca tagtgcgat cgtaggtcga	960
aatgggtctat gtgttgatgt tagggatgga agattccaca acggaacgc aatacagttg	1020
tggccatgca agtctaatac agatgcaaat cagctctgga ctttgaaaag agacaatact	1080
attcgatcta atggaaagtg ttttaactact tacgggtaca gtccgggagt ctatgtgatg	1140
atctatgatt gcaatactgc tgcaactgat gccacccgct ggcaaataat ggataatgga	1200
accatcataa atcccagatc tagtctagtt ttagcagcga catcagggaa cagtgggtacc	1260
acacttacag tgcaaaccaa catttatgcc gttagtcaag gttggcttcc tactaataat	1320
acacaacctt ttgttacaac cattgttggg ctatatggtc tgtgcttgca agcaaatagt	1380
ggacaagtat ggatagagga ctgtagcagt gaaaaggctg aacaacagtg ggctctttat	1440
gcagatgggt caatacgtcc tcagcaaaac cgagataatt gccttacaag tgattctaata	1500
ataggggaaa cagttgttaa gatcctctct tgtggccctg catcctctgg ccaacgatgg	1560
atgttcaaga atgatggaac cattttaaat ttgtatagtg ggttggtgtt agatgtgagg	1620
cgatcggatc cgagccttaa acaaatcatt ctttaccctc tccatgggtga cccaaacc	1680
atatggttac cattattttg atagacagat tactctcttg cagtgtgtgt gtcctgccat	1740
gaaaatagat ggcttaaata aaaaggacat tgtaaatttt gtaactgaaa ggacagcaag	1800
ttatatcgaa ttctgcag	1819

<210> 97

<211> 29

<212> PRT

<213> Ricinus communis

<400> 97

Cys	Ala	Pro	Pro	Pro	Ser	Ser	Gln	Phe	Ser	Leu	Leu	Ile	Arg	Pro	Val
1				5					10					15	

Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu
		20					25					

<210> 98

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP321 (UPA) linker

<400> 98

Cys	Gly	Gly	Pro	Gly	Arg	Val	Val	Gly	Gly	Gly	Gly	Cys	Met	Asp	Pro
1				5					10					15	

Glu

<210> 99

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 322-3'

<400> 99

gtagtcggcg ggggctgtat ggatcctgag

<210> 100

<211> 105

<212> DNA

<213> Ricinus communis

<400> 100

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 101

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 322-5'

<400> 101

tcgtcctggc ccgcatttat acaccat 27

<210> 102

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP322 (UPA) linker

<400> 102

ggaccaggac gagtagtcgg cgggggc 27

<210> 103

<211> 1813

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP322

<400> 103

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg	60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc	120
aaacaatacc caattataaa ctttaccaca gcggttgcca ctgtgcaaag ctacacaaac	180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca	240
gtgttgccaa acagagtttg tttgcctata aaccaacggt ttatttttagt tgaactctca	300
aatcatgcag agcttttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atattttctt catcctgaca atcaggaaga tgcagaagca	420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgccttttg tggttaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa	780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg accaggacga	900
gtagtcggcg ggggctgtat ggatcctgag cccatagtgc gtatcgtagg tcgaaatggt	960
ctatgtgttg atgttaggga tggaagattc cacaacggaa acgcaataga gttgtggcca	1020
tgcaagtcta atacagatgc aaatcagctc tggactttga aaagagacaa tactattcga	1080
tctaatggaa agtgtttaac tacttacggg tacagtccgg gagtctatgt gatgatctat	1140
gattgcaata ctgctgcaac tgatgccacc cgctggcaaa tatgggataa tggaaccatc	1200
ataaatccca gatctagtct agtttttagca gcgacatcag ggaacagtgg taccacactt	1260
acagtgcaaa ccaacattta tgccgttagt caaggttggc ttctactaa taatacacia	1320
ccttttgta caaccattgt tgggctatat ggtctgtgct tgcaagcaaa tagtggacaa	1380
gtatggatag aggactgtag cagtgaagg gctgaacaac agtgggctct ttatgcagat	1440
ggttcaatac gtcctcagca aaaccgagat aattgcctta caagtgattc taatatacgg	1500
gaaacagttg ttaagatcct ctcttggtggc cctgcatcct ctggccaacg atggatgttc	1560
aagaatgatg gaaccatttt aaatttgat agtgggttgg tgtagatgt gaggcgatcg	1620

gatccgagcc ttaaacaaat cattctttac cctctccatg gtgacccaaa ccaaataatgg 1680
ttaccattat tttgatagac agattactct cttgcagtgt gtgtgtcctg ccatgaaaat 1740
agatggctta aataaaaagg acattgtaaa ttttgtaact gaaaggacag caagttatat 1800
cgaattcctg cag 1813

<210> 104

<211> 29

<212> PRT

<213> Ricinus communis

<400> 104

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 105

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP322 (UPA) linker

<400> 105

Cys Gly Pro Gly Arg Val Val Gly Gly Gly Cys Met Asp Pro Glu
1 5 10 15

<210> 106

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 323-3'

<400> 106

attgcagggc aggggggtag tagcggcggg ggatgtatgg atcctgag

48

<210> 107

<211> 105

<212> DNA

<213> Ricinus communis

<400> 107

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca

60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc

105

<210> 108

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 323-5'

<400> 108

tccttgcgga cccctggag tcccgccctcc gcatctatac accat

45

<210> 109

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP323 (MMP-9) linker

<400> 109

ggaggcggga ctccagggggg tccgcaagga attgcagggc aggggggtag tagcggcggg

60

gga

63

<210> 110

<211> 1849

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP323

<400> 110

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg	60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc	120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac	180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca	240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atattttctt catcctgaca atcaggaaga tgcagaagca	420
atcactcacc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggttaattat	480
gatagacttg aacaacttgc tggtaaatctg agagaaaata tcgagttggg aaatggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat	660
attgaggagg aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttggggggaga ctttccactg caattcaaga gtctaaccac	780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcgggact	900
ccaggggggc cgcaaggaat tgcagggcag gggggtagta gcggcggggg atgtatggat	960
cctgagccca tagtgcgat cgtaggtcga aatggtctat gtgttgatgt tagggatgga	1020
agattccaca acggaaacgc aatacagttg tggccatgca agtctaatac agatgcaa	1080
cagctctgga ctttgaaaag agacaatact attcgatcta atggaaagtg tttaactact	1140
tacgggtaca gtccgggagt ctatgtgatg atctatgatt gcaatactgc tgcaactgat	1200
gccaccgcgt ggcaaataat ggataatgga accatcataa atcccagatc tagtctagtt	1260
ttagcagcga catcagggaa cagtgggtacc acacttacag tgcaaaccac catttatgcc	1320
gttagtcaag gttggcttcc tactaataat acacaacctt ttgttacaac cattgttggg	1380
ctatatgggc tgtgcttgca agcaaatagt ggacaagtat ggatagagga ctgtagcagt	1440

```

gaaaaggctg aacaacagtg ggctctttat gcagatgggt caatacgtcc tcagcaaaac 1500
cgagataatt gccttacaag tgattctaata atacgggaaa cagttgttaa gacacctctc 1560
tgtggccctg catcctctgg ccaacgatgg atgttcaaga atgatggaac cattttaaat 1620
ttgtatagtg ggttggtggt agatgtgagg cgatcggatc cgagccttaa acaaatcatt 1680
ctttaccctc tccatggtga cccaaaccaa atatgggttac cattatcttg atagacagat 1740
tactctcttg cagtgtgtgt gtcctgccat gaaaatagat ggcttaaata aaaaggacat 1800
tgtaaatctt gtaactgaaa ggacagcaag ttatatcgaa ttcctgcag 1849

```

<210> 111

<211> 29

<212> PRT

<213> Ricinus communis

<400> 111

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1          5          10          15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20          25

```

<210> 112

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP323 (MMP-9) linker

<400> 112

```

Cys Gly Gly Gly Ser Ser Gly Gly Pro Gln Gly Ile Ala Gly Gln Gly
1          5          10          15

```

```

Gly Ser Ser Gly Gly Gly Cys Met Asp Pro Glu
          20          25

```

<210> 113

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 324-3'

<400> 113
attgcagggc agggtagtag cggcggggga tgtatggatc ctgag 45

<210> 114

<211> 105

<212> DNA

<213> Ricinus communis

<400> 114
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60
gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 115

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 324-5'

<400> 115
tccttgcgga cctggagtcc cgcctccgca tctatacacc at 42

<210> 116

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP324 (MMP-9) linker

<400> 116

ggaggcgga ctccaggtcc gcaaggaatt gcagggcagg gtagtagcgg cggggga 57

<210> 117

<211> 1843

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP 324

<400> 117

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgccca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggg ttatttttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atattttctt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatgggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccac 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggggggact 900

ccaggctcgc aaggaattgc agggcagggt agtagcggcg ggggatgtat ggatcctgag 960

cccatagtgc gtatcgtagg tcgaaatggg ctatgtgttg atgttaggga tggaagattc 1020

cacaacggaa acgcaatata gttgtggcca tgcaagtcta atacagatgc aaatcagctc 1080

tggactttga aaagagacaa tactattcga tctaattggaa agtgtttaac tacttacggg 1140

```

tacagtccgg gagtctatgt gatgatctat gattgcaata ctgctgcaac tgatgccacc 1200
cgctggcaaa tatgggataa tggaaccatc ataaatccca gatctagtct agtttttagca 1260
gcgacatcag ggaacagtgg taccacactt acagtgcaaa ccaacattta tgccgttagt 1320
caaggttggc ttcctactaa taatacacia cctttttgtta caaccattgt tgggctatat 1380
ggctctgtgt tgcaagcaaa tagtggacaa gtatggatag aggactgtag cagtgaaaag 1440
gctgaacaac agtgggctct ttatgcagat ggttcaatac gtcctcagca aaaccgagat 1500
aattgcctta caagtgattc taatatacgg gaaacagttg ttaagatcct ctcttgtggc 1560
cctgcacctc ctggccaacg atggatgttc aagaatgatg gaaccatttt aaatttgtat 1620
agtgggttgg tgtttagatgt gaggcgatcg gatccgagcc ttaaacaat cattctttac 1680
cctctccatg gtgacccaaa ccaaatatgg ttaccattat tttgatagac agattactct 1740
cttgcaagtgt gtgtgtcctg ccatgaaaat agatggctta aataaaaagg acattgtaaa 1800
ttttgtaact gaaaggacag caagttatat cgaattcctg cag 1843

```

<210> 118

<211> 29

<212> PRT

<213> Ricinus communis

<400> 118

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1          5          10          15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20          25

```

<210> 119

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP324 (MMP-9) linker

<400> 119

Cys Gly Gly Gly Ser Ser Gly Pro Gln Gly Ile Ala Gly Gln Gly Ser
1 5 10 15

Ser Gly Gly Gly Cys Met Asp Pro Glu
20 25

<210> 120

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 325-3'

<400> 120
attgcagggc agagtagcgg cgggggatgt atggatcctg ag 42

<210> 121

<211> 105

<212> DNA

<213> Ricinus communis

<400> 121
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60
gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 122

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 325-5'

<400> 122
tccttgcggt ggagtcgcc ctccgcattc atacaccat 39

<210> 123

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP325 (MMP-9) linker

<400> 123

ggaggcgga ctccaccgca aggaattgca gggcagagta gcggcggggg a 51

<210> 124

<211> 1837

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP325

<400> 124

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60
ctttgttttg gatccacctc aggggtggtct ttcacattag aggataacaa catattcccc 120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180
tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgccttttg tggttaattat 480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660
attgaggggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780
ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcgggact 900

```

ccaccgcaag gaattgcagg gcagagtagc ggcgggggat gtatggatcc tgagcccata 960
gtgcgtatcg taggtcgaaa tgggtctatgt gttgatgtta gggatggaag attccacaac 1020
ggaaacgcaa tacagttgtg gccatgcaag tctaatacag atgcaaatca gctctggact 1080
ttgaaaagag acaatactat tcgatctaata gaaaagtgtt taactactta cgggtacagt 1140
ccgggagtct atgtgatgat ctatgattgc aatactgctg caactgatgc caccgctgg 1200
caaatatggg ataatggaac catcataaat cccagatcta gtctagtttt agcagcgaca 1260
tcagggaaca gtggtaccac acttacagtg caaaccaaca tttatgccgt tagtcaagggt 1320
tggcttccta ctaataatac acaacctttt gttacaacca ttgttgggct atatggtctg 1380
tgcttgcaag caaatagtgg acaagtatgg atagaggact gtagcagtga aaaggctgaa 1440
caacagtggg ctctttatgc agatggttca atacgtcctc agcaaaaccg agataattgc 1500
cttacaagtg attctaatat acgggaaaca gttgttaaga tcctctcttg tggccctgca 1560
tcctctggcc aacgatggat gttcaagaat gatggaacca ttttaaattt gtatagtggg 1620
ttggtgttag atgtgaggcg atcggatccg agccttaaac aaatcattct ttaccctctc 1680
catggtgacc caaaccaaat atggttacca ttattttgat agacagatta ctctcttgca 1740
gtgtgtgtgt cctgccatga aaatagatgg cttaaataaa aaggacattg taaattttgt 1800
aactgaaagg acagcaagtt atatcgaatt cctgcag 1837

```

<210> 125

<211> 29

<212> PRT

<213> Ricinus communis

<400> 125

```

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1          5          10          15

```

```

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
          20          25

```

<210> 126

<211> 23

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP325 (MMP-9) linker

<400> 126

Cys Gly Gly Gly Ser Ser Pro Gln Gly Ile Ala Gly Gln Ser Ser Gly
1 5 10 15

Gly Gly Cys Met Asp Pro Glu
20

<210> 127

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 127
ataaacttgct gctcctttca

20

<210> 128

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 128
ccgggaggaa atactattgt aat

23

<210> 129

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 129

ggaggaatcc ggagatgaaa ccgggaggaa atactattgt aat

43

<210> 130

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 130

gtaggcgctg cagataactt gctgtccttt cag

33